

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-14 are pending.

The Examiner is respectfully requested to reconsider the rejections in view of the remarks set forth herein.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,091,537 to Su et al. ("Sun"). This rejection is respectfully traversed.

Because the rejection is based on 35 U.S.C. § 103, what is in issue in such a rejection is "the invention as a whole," not just a few features of the claimed invention. Under 35 U.S.C. § 103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter *as a whole* would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under § 103 is whether the claimed invention *as a whole* would have been obvious to a person of ordinary skill in the art at the time the invention was made. *See In re O'Farrell*, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. *See Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983).

In rejecting claims under 35 U.S.C. § 103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073,

5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In doing so, the Examiner is expected to make the factual determinations set forth in *Graham v John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. *See Uniroyal Inc. v. F-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), *cert. denied*, 488 U.S. 825 (1988); *Ashland Oil, Inc. v Delta Resins & Refractories, Inc.*, 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986); *ACS Hospital Systems, Inc. v Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. *See In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *See In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. *See In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." *See C.R. Bard, Inc. v. M3 Sys. Inc.*, 157 F.3d

1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." *See In re Dembiczak*, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Moreover, it is well settled that the Office must provide objective evidence of the basis used in a prior art rejection. A factual inquiry whether to modify a reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. *See In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Furthermore, during patent examination, the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. *See In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the Applicant is entitled to the patent. Only when a *prima facie* case is made, the burden shifts to the Applicant to come forward to rebut such a case.

A prior art reference anticipates the subject matter of a claim when that reference discloses every feature of the claimed invention, either explicitly or inherently. *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and *Hazani v. Int'l Trade Comm'n*, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997). While, of course, it is possible that it is inherent in the operation of the prior art device that a particular element operates as theorized by the Examiner, inherency may not be established by probabilities or possibilities. What is *inherent*, must necessarily be disclosed. *See In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981); *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

Claim 1, recites a method of producing a compact movable structure for a light shaping unit comprising: forming a light shaping unit from a material provided on a carrier of another material; and forming a micromechanical structure from the carrier which is adapted to move the light shaping unit, wherein the light shaping unit is formed before the micromechanical structure is formed.

In Sun, the microlens 12 is disclosed as a photoresist microlens (col. 3, lines 8-33, and the hatching in Figs. 2 and 3, which is the same for polyimide layer 70 and polyimide microlens 12). The micro lens shutter is fabricated from Si-based material, see column 3, lines 5-7. Thus, Sun's microlens is made from polyimide, which is a different material than the Si-based carrier material on which it is located. Because of this, Sun's light shaping unit is formed on a carrier of another material.

However, Sun teaches a significantly different method of making electro-actuated microlens assemblies than the claimed method.

Sun is limited to making its lens after its carrier structure is formed, and making the lens out of a polyimide photoresist material using a melting and reflow process that employs surface tension to obtain the desired lens shape.

The Office Action fails to explain how one of ordinary skill in the art can make Sun's lens the way it discloses that it is made, before forming the carrier structure in which it is formed, because the carrier structure is needed to form the lens the way it is formed.

Applicants respectfully submit that there is no objective factual evidence of record which would properly motivate one of ordinary skill in the art to do away with the disclosed method of

lens formation of Sun and decide to use another method of lens formation that would form the lens before the carrier structure is formed.

The Office Action takes as a given that the lens can be formed before the micromechanical carrier is formed or after the micromechanical carrier is formed. Unfortunately, no evidence backing up this statement is presented, and the only reference relied upon, only teaches forming its lenses after the micromechanical carrier is formed.

Additionally, in order to arrive at the claimed invention, the Office Action has to completely redesign Sun, which makes its lens array devices in a specific detailed manner utilizing a resist melt and reflow method, by completely eliminating that disclosed resist melting and reflow method of how it forms its lenses, and use allegedly conventional embossing methods (no evidence of which is presented).

Applicants respectfully submit that the Office Action fails to present any objective factual evidence that one of ordinary skill in the art would be properly motivated to completely redesign the way Sun's lenses are formed.

Furthermore, no details are given in the Office Action concerning what advantage would result from the proposed speculative modification of Sun to give one of ordinary skill in the art sufficient incentive to so fundamentally redesign Sun. For example, the Office Action never explains why, if Sun is modified as proposed, one of ordinary skill in the art would be properly motivated to use a material other than the carrier material to form the lenses. Another way of stating this is that Sun only discloses using a different material (resist polyimide) for its lenses than its carrier material (Si based) because it makes the lenses after it makes the carrier material,

and if this fundamental aspect of the invention is done away with (as it is in the rejection), then there is no reason to use a different material than the carrier material to form Sun's lenses.

Additionally, Applicants note that the underlying problem solved by of the present invention, a problem that is found, for example, in Sun, is to provide a simplified production of the light shaping unit on a micromechanical structure, compared with the prior art. Support for this problem definition is found on page 1, line 39 – page 2, line 3 of the description.

This solution is achieved through a method of producing a compact movable structure for a light shaping unit comprising the steps of: forming a light shaping unit from a material provided on a carrier of a first material, and forming a micromechanical structure from the carrier in a second, different material, whereby the forming of the light shaping unit is performed before the forming of the micromechanical structure.

Applicants' claimed production method, where the forming of the light shaping unit 12 in a first material takes place before the forming of the micromechanical structure 14, 16, 18, 22, 28, 29 in a second, different material, makes it possible to form a light shaping unit 12 with an underlying micromechanical structure 14, 16, 18, 22, 28, 29 in a simple way that does not have any difficult compatibility requirements between forming of micromechanics 14, 16, 18, 22, 28, 29 and forming of the light shaping unit 12. Expensive later mounting of individual elements in the light shaping unit 12 is also avoided, see page 7, line 6-11. The claimed invention thus provides a simplified production method of delicate material by firstly produce the lens and then producing the micromechanical structure for moving the lens.

The problem that the invention solves is not addressed at all in Sun. On the contrary, Sun teaches a prior art method of making that has been described in the present application as having great disadvantages.

Typically, prior art devices and methods such as the ones disclosed in Sun, where the lens and the micromechanical structure are made out of the same material, provide a compromise between the optical properties, mechanical properties and costs.

Sun actually leads the person skilled in the art away from the claimed invention by stipulating that the microlens is formed after having firstly started to produce the micromechanical structure, see column 3, line 26-31.

The only basis that the Office Action presents to conclude that one of ordinary skill in the art would be properly motivated to fundamentally alter, by reversing the order in which Sun's microlens and carrier are made, is based on nothing more than speculation. However, it is well settled that a rejection under 35 U.S.C. §103 cannot properly be based on speculation but must be based on objective factual evidence of record. See, *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). See, also, *In re GPAC Inc.*, 35 USPQ2d 1116 at 1123 (Fed. Cir. 1995) and *Ex parte Haymond*, 41 USPQ2d 1217 at 1220 (Bd. Pat. App. & Int. 1996).

Applicants also respectfully submit that if the claimed method were so obvious, then Sun would have disclosed it. However, Sun did not disclose it, and provides no factual evidence on which one of ordinary skill in the art would have a reason to do eliminate Sun's disclosed method and do just the opposite.

Claim 8

Additionally, in dependent claim 8, the claimed invention recites forming an opening from the bottom of the carrier in a direction towards the light shaping unit in order to provide a light passage channel, wherein the light shaping unit serves as an etch stop in the forming of the opening. Sun, however, in sharp contrast, discloses using SiO₂ as a substrate etch stop layer, see column 3, line 28-29.

Moreover, as pointed out by the Examiner in the Communication, the feature of firstly forming the light shaping unit and secondly forming the micromechanical structure is not mentioned in Sun.

This is, however, an important feature of the claimed invention, because the lens is formed while the substrate is strong. The claimed production method eliminates the tedious work of placing a separately produced lens inside a fragile separately produced micromechanical structure. Thus mass production of light shaping units through embossing is facilitated.

Further, by forming an opening from the bottom of the carrier in a direction towards the light shaping unit in order to provide a light passage channel, wherein the light shaping unit serves as an etch stop in the forming of the opening, the mass production of light shaping units is further simplified and improved. Clearly, in Sun, the light shaping unit (lens) does not serve as an etch stop in forming of the opening.

Thus reconsideration and withdrawal of this rejection of claims 1-14 are respectfully requested.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone Robert J. Webster (Reg. No. 46,472) at (703) 208-5000.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

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Respectfully submitted,

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